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What is claimed is:

1. A fermentation medium comprising:
 - (a) a source of metabolizable carbon and energy;
 - (b) a source of inorganic nitrogen;
 - (c) a source of phosphate;
 - (d) at least one metal selected from the group consisting of an alkali metal, an alkaline earth metal, transition metals, and mixtures thereof; and
 - (e) a source of biotin, substantially free of particulate matter and bacteria.
2. The medium of claim 1 wherein the source of metabolizable carbon and energy is glucose.
3. The medium of claim 1 wherein the source of inorganic nitrogen is ammonium sulfate.
4. The medium of claim 1 wherein the source of inorganic nitrogen is ammonia.
5. The medium of claim 1 wherein the source of inorganic nitrogen is ammonium hydroxide.
6. The medium of claim 1 wherein the source of phosphate is potassium phosphate.
7. The medium of claim 1 wherein the metal is calcium.
8. The medium of claim 1 wherein the metal is magnesium.
9. The medium of claim 1 wherein the metal is both calcium and magnesium.
10. The medium of claim 1 further comprising an antifoam agent.
11. The medium of claim 1 further comprising a chelating agent.
12. The medium of claim 1 further comprising at least one trace metal.
13. A fermentation medium comprising:
 - (a) glucose;
 - (b) an ammonium salt;
 - (c) a phosphate salt;
 - (d) a potassium salt;
 - (e) magnesium sulfate;

- (f) a calcium salt;
 - (g) an iron salt;
 - (h) a chelating agent; and
 - (i) a trace metal.
14. A process for making a polycarboxylic acid, a polyol, or a polyhydroxy acid comprising:
- (a) providing an organism capable of producing a polycarboxylic acid, a polyol or a polyhydroxy acid;
 - (b) providing a substrate capable of being converted into a polycarboxylic acid, a polyol, or a polyhydroxy acid by the organism;
 - (c) providing a fermentation medium containing:
 - (i) a source of metabolizable carbon and energy;
 - (ii) a source of inorganic nitrogen;
 - (iii) a source of phosphate;
 - (iv) at least one metal selected from the group consisting of an alkali metal, an alkaline earth metal, a transition metal, and mixtures thereof; and
 - (v) a source of biotin, substantially free of particulate matter and bacteria; and
 - (d) fermenting the organism and substrate in the fermentation medium.
15. The process of claim 14 wherein the organism is *C. tropicalis*.
16. The process of claim 14 wherein the substrate is an alkane having from about 4 to about 25 carbon atoms.
17. The process of claim 14 wherein the source of metabolizable carbon and energy is glucose.
18. The process of claim 14 wherein the source of inorganic nitrogen is ammonium sulfate.
19. The process of claim 14 wherein the source of phosphate is potassium phosphate.
20. The process of claim 14 wherein the metal is calcium.
21. The process of claim 14 wherein metal is magnesium.

22. The process of claim 14 wherein the metal is both calcium and magnesium.
23. The process of claim 14 wherein the medium further comprises a chelating agent.
24. The process of claim 14 wherein the medium further comprises an antifoam agent.
25. The process of claim 14 wherein the medium further comprises at least one trace metal.
26. The process of claim 14 wherein step (d) is performed at a pH of up to about 7.
27. The process of claim 14 further comprising maintaining dissolved oxygen concentration levels below about 25% during step (d).
28. The process of claim 14 wherein the source of inorganic nitrogen is selected from the group consisting of ammonia, ammonium hydroxide, and mixtures thereof.